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08/165,737 12/10/93 KRUG

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EXAMINER

HAYES, G

ART UNIT

PAPER NUMBER

6

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23N1/0506

2311

DATE MAILED:

05/06/94

05/06/94

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 12-10-93 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1, 57-69 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☒ Claims 2-56 have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1, 57, 59-69 are rejected.

5. ☒ Claims 58 are objected to.

as dependent on a rejected base claim,
6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

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1. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

2. Claims 57 and 59-66 are rejected under 35 U.S.C. § 103 as being unpatentable over Annis.

3. Annis is directed to a system for automatic detection of explosive materials. Use of the system involves exposing an object such as luggage 40 to x-ray radiation. Luggage is normally used to carry an ensemble of articles. As the entire object 40 is exposed to x-rays, the Examiner respectfully asserts that each region of the object is so exposed. Therefore the attenuation registered by detector units 25 and 50 corresponds to each region of the object. Signals from detector units are transmitted to units 501 and 251 for subsequent processing. These units are used to determine direct attenuation and backscatter associated with x-rays passing through the object.

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Column 3 lines 6-14 of Annis indicates that the system is used to distinguish threats from non-threatening material. The Examiner therefore asserts that the processing of data would have been in a manner not significantly influenced by underlying or overlying target material.

3. One form of processing done by the Annis invention is to determine the intensity of the backscatter signal. Backscatter is a function not only of material density but the thickness as well. These signals are stored and processed to form of a histogram. The histogram is compared to stored values representative of threshold values for pixel intensities and pixel numbers (i.e., the area of interest). See column 3 lines 15-60.

4. The invention as recited in claim 57 differs from that of Annis in that no steps of registering is explicitly discussed. Column 5 lines 15-41 disclose that areas of the image corresponding to levels exceeding established thresholds are flashed to illuminate the shape of the threat. See also column 10 line 59 to column 11 line 21. The Examiner respectfully asserts that this disclosure would have motivated one skilled in the art to register locations of the object area which are exceed the threshold level (i.e., which are in substantial agreement with stored threshold levels).

Claim 57 is rejected.

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5. Annis flashes lights to "show the operator the shape or distribution of the threat". The Examiner respectfully asserts that in order for the shape to be illuminated, the detected edges and the adjacent areas of the threat are highlighted. Claim 59 is rejected.

6. As indicated by the above discussions, determinations of property values are performed by computer analysis. Claim 60 is rejected.

7. Use of a lookup table to store variables used for computer based comparisons is well known. As indicated in column 3 line 61 to column 4 line 19, the backscatter measured by the Annis system is a function not only of material density as well as thickness. Thus, stored values are based on actual measurements performed on a given material under varying conditions and one of these conditions is material thickness. Claims 61-62 are rejected.

8. Use of display means 502 and 252 are disclosed by Annis. Claim 63 is rejected.

9. Annis discloses use of a fan beam for scanning. Claim 64 is rejected.

10. As previously discussed, the object scanned by Annis is luggage. Annis also discloses use of conveyor 80 for moving the luggage pass the fixed source 15. Claim 65 is rejected.

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11. Annis discloses use of detector units 50 and 25. Use of a linear array as the detector unit is well known. Claim 66 is rejected.

12. Claims 1, 67-69 are rejected under 35 U.S.C. § 103 as being unpatentable over Annis as applied to claims 57 and 59-66 above, and further in view of the Alvarez report submitted by Applicant..

13. Use of dual energy x-rays for detection of concealed explosives is disclosed by the Alvarez report. The artisan would have been motivated to be as accurate as possible because of the dangers involved. She would have therefore incorporated any additional features which would have increased the accuracy of the detection. Page 1 of the report indicates that more detail on the object is obtained if dual energy x-rays are used. Thus, motivation and means exist for incorporation of dual energy x-rays. Claim 67 is rejected.

14. Claim 69 includes limitations of claims 57, 60, and 65-66 and is rejected on the same basis.

15. Use of x-rays to produce dual energy image information for inspection of an ensemble of objects has been discussed above. The invention as recited in claim 1 also requires means to process the resultant information on the basis of comparisons of selected subareas of the exposed area to other subareas in the vicinity of the selected subareas. The Examiner notes that Annis

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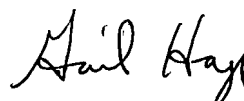
discloses use of the spread or area of pixels meeting a pre-established threshold value in order to detect explosive material. In order to determine if the particular pixel value meets established criteria, the system must make some comparison. The comparison could be of course to threshold values only, however, the Examiner respectfully asserts that in order to ensure that the pixel values belong to the same device and to display the shape of the device, one skilled in the art would have been motivated to compare pixels with not only a threshold but with each other as well. This is a standard feature extraction technique in imaging systems. Claims 1 and 68 are rejected.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Hayes whose telephone number is (703) 305-9773.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Information associated with this application may be submitted by facsimile on (703) 305-9564 or 9565.

May 1, 1994


GAIL O. HAYES
PRIMARY EXAMINER
GROUP 2300